JACOBSSON et al.
Serial No. 10/751,104

Atty Dkt: 4127-11
Art Unit: 2817

REMARKS/ARGUMENTS

Reexamination of the captioned application is respectfully requested.

A. SUMMARY OF THIS AMENDMENT

By the current amendment, Applicants basically:

1. Amend the title at the invitation of the Examiner.
2. Amend the Abstract.
3. Editorially amend the specification.
4. Thank the Examiner for the indication of allowable subject matter in claims 7 – 18.
5. Amend all claims for editorial reasons (e.g., US practice convention, punctuation, subject/verb agreement) unrelated to patentability.
6. Respectfully traverse all prior art rejections.

B. PATENTABILITY OF THE CLAIMS

Claims 1-6, 19 and 22-26 stand rejected under 35 USC 102(e) as being anticipated by U.S. Patent 6,462, 626 to Gharpurey et al. Claims 1-5, 19-21 and 24-26 stand rejected under 35 USC 102(e) as being anticipated by U.S. Patent 6,456,167 to Huang. All prior art rejections are respectfully traversed for at least the following reasons.

The first feature of the characterizing portion of claim 1 is that there is a first AC coupling between one fundamental frequency AC-ground point of the first differential oscillator and one fundamental frequency AC-ground point of the second oscillator. This feature, e.g., is not taught or suggested in either applied reference.

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U.S. Patent 6,462, 626 to Gharpurey et al.

Page 3 of the Office Action states that gain adjust unit 48 (see Fig. 3) of U.S. Patent 6,462, 626 to Gharpurey et al. is an AC coupling. This allegation belies a fundamental misunderstanding. Gain adjust unit 48 is provided to compensate for device mismatches within a quadrature output oscillator device. Gain adjust unit 48 controls gains or amplifiers 42, 46.

Claim 1 further states that the oscillator circuit comprises a first AC coupling "... *thus locking the first differential oscillator to the second*". Hence, it is the first AC coupling that actually provides for locking. Gain adjust unit 48 of U.S. Patent 6,462, 626 to Gharpurey et al. does not, and cannot, and is not intended to, provide for locking between the oscillators 40, 44. Rather, these oscillators would instead lock without gain adjust unit 48. In this regard, column 3, lines 62-65 of U.S. Patent 6,462, 626 to Gharpurey et al. states that the feedback arrangement provided through first and second amplifiers 42, 46 assists in locking first VCO 40 with second VCO 44 such that they become stable when quadrature locked.

Thus, there is indeed no AC coupling between the oscillators in Gharpurey, but instead only a gain adjust unit (48). The gain adjust unit (48) is not be capable of locking VCOs 40, 44, since there can only be a parasitic coupling between them, and it is also neither the intention, nor is it needed, since locking is achieved by other means.

Hence, it is submitted that claim 1 is not anticipated by and patentably distinguishes over Gharpurey. It is (among others) an advantage of claim 1 that a much simpler circuit is obtained and that the phase noise will be very low.

Since claim 1 is novel and non-obvious, it is not necessary to argue in favor of the other rejected claims which depend on claim 1. However, remarks regarding a few of the

dependent claims are hereinafter provided, primarily for correcting technical misstatements in the Office Action.

- As far as claim 2 is concerned, it is submitted that the rejection is due to a further misunderstanding. In this regard, Gharpurey shows four outputs, whereas claim 2 claims a first quadrature frequency output $4f_0$, cf. e.g. page 12, 3rd paragraph of the specification.

- In dependent claim 6 the VDD supply line is not an AC coupling but rather a DC ground.

- In dependent claim 19, the PMOS is not an AC impedance element, since it is extremely weak.

- In dependent claim 20, the parasitic capacitance of the PMOS is very small and could never be used as a coupling for locking VCOs.

U.S. Patent 6,456,167 to Huang

Nor is independent claim 1 anticipated by or rendered unpatentable by U.S. Patent 6,456,167 to Huang. Huang's coupling is *not* an AC coupling, but a DC coupling. Furthermore Huang's DC coupling is not used to lock the oscillators to one another, as evident e.g. from Fig. 7 and column 4, two first paragraphs. Huang's DC coupling is used to improve phase noise. Locking is achieved in a totally different way, as shown through the arrangement on top of Fig. 7, and described with reference to Fig. 3.

Hence, Huang's DC coupling is not needed for, and not used for, locking the oscillators to one another.

Page 6, lines 6-9 of the Office Action curiously states that locking is achieved: *"the coupling by direct connection between two equilibrium points locks the first and second oscillator because the structure is the same manner as disclosed in the specification"*. Applicants submit that such is not the case, and there is simply no reason why the connections at the top of Fig. 7, Fig. 3 would be used to achieve locking. Even if locking could have been achieved through Huang's DC coupling in a manner as shown in Fig. 7, Huang certainly did not realize such. Rather, Huang built a much more complicated circuit to achieve phase locking, and thus would not suggest locking by a coupling to the person skilled in the art. The person skilled in the art would acquire from Huang only an explicit indication of the use of the DC coupling for noise reduction purposes.

Thus, Applicants submit that independent claim 1 patentably distinguishes over the applied references. Neither by some negligible parasitic coupling *(Gharpurey)*, nor by the direct coupling of Huang, can locking be achieved. Rather, both applied references clear teach that locking is achieved by other means, the device *(48)* of Gharpurey merely being used for fine adjustment and the direct coupling of Huang being used for reducing phase noise.

C. MISCELLANEOUS

In view of the foregoing and other considerations, all claims are deemed in condition for allowance. A formal indication of allowability is earnestly solicited.

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

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Should the Examiner feel that an interview with the undersigned would facilitate allowance of this application, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____

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